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MITIGATING CATASTROPHIC EVENTS THROUGH EFFECTIVE MEDICAL RESPONSE

Mr. Chairman and members of the committee, I thank you for the opportunity to appear before you and discuss ways to improve domestic medical response capabilities within the United States. I am a physician and a Senior Research Fellow in the Center for Technology and National Security Policy at the National Defense University, and am working on several studies examining preparedness for and response to terrorism, public health emergencies such as Severe Acute Respiratory Syndrome (SARS) and pandemic influenza, and natural disasters such as hurricanes and earthquakes. I would like to share with you some common themes I have identified that suggest opportunities for improving our nation's ability to respond to such catastrophes.

Katrina exposed systemic problems in local, state, federal, and military response coordination, problems that will be much more severe and have much more negative outcomes in the event of a terrorist attack in multiple cities. The strained medical response when there were only a few dozen serious injuries as a direct result of the hurricane shows that there is much to be done to prepare for a terrorist incident that suddenly produces hundreds or thousands of casualties in multiple locations. This underscores the importance of coordinated preparedness planning between these levels of government that incorporates the private sector, volunteer and faith-based organizations, and academic institutions. It is crucial for response agencies at each level to understand their roles and responsibilities, their capabilities and limitations, and from whom they will obtain additional resources when their capabilities have been overwhelmed. We are destined to continued haphazard responses until we get this right. While this discussion focuses on mass casualties, the principles apply in the law enforcement, logistics, evacuation, recovery, and communications areas as well.

Difficulties in responding to a catastrophic event are particularly apparent and challenging in the medical and public health areas, when a coordinated civil-military response will likely be needed for an incident that produces significant casualties. There is no healthcare "system" in the United States; there is instead a vast collection of public and private institutions, agencies, and individuals that deliver healthcare services, only a small portion of which are provided by local, state, and Federal authorities. Civilian referral hospitals are largely unprepared to handle the large patient load from a catastrophic event. Hospitals are often filled to capacity, have few isolation beds for contagious infections, and have insufficient staff to handle a large influx of patients. If an attack involved the real or perceived threat of biological or chemical weapons, civilian hospitals might refuse to take contaminated or contagious casualties altogether.

### **Needs to Improve National Preparedness**

There are three broad areas that are essential to improve national preparedness: requirements-based mass casualty planning, learning to work across institutional cultures of response agencies, and learning coordinated crisis management decision-making. In the coming weeks, analysis of the local, state, and federal response to Katrina will yield details about – and insights into improving – these elements, so only a brief description of them is necessary at this point.

*Requirements:* Comprehensive planning for a mass casualty response must start with defining requirements, identifying capabilities needed to meet them, and then linking particular units or personnel to particular needs in specific locations. Policies and procedures must be developed to task particular resources for an actual mission, reimburse all associated costs, and backfill the unit or personnel for whatever it was involved in when tasked.

It is difficult to predict the types and numbers of casualties from a conventional explosion, a communicable biological weapons attack, release of a chemical agent, a nuclear weapon detonation, or a radiological dispersion device where a conventional explosive has been contaminated with radioactive material. Numbers of casualties would depend on whether the explosion or release takes place indoors or outdoors, in a densely populated area, in or near a mass transit system, or at the busiest time on a weekday. These complexities are the first order effects of the attack—the victims directly injured, exposed, or contaminated by the event.

Complexities increase exponentially through second and third order effects, the unintended consequences of the event. People exposed to radiological material or anthrax spores will track the material on their shoes and clothes, endangering more. Those fleeing an incident area may move into a more hazardous zone. Persons exposed to a covert release of a communicable biological agent such as smallpox, plague, or influenza will depart the initial area of exposure and travel to their homes, school, work, or around the world on commercial air flights while incubating an infection. They become a risk to others and cause secondary cases as person-to-person transmission takes place.

These types of complexities, especially those that deal with how people might respond in a crisis, cause many officials to move such requirements planning into the “too hard to do” box. In actuality, however, much supportive work has been done in social network analysis and adaptive response that sheds light on likely human behaviors. Well worded, timely messages from appropriate opinion leaders often lead to desired behaviors. The challenge that faces the nation, though, is who should identify this supportive work, develop and test solutions, and integrate strategies into response plans at all levels? From the local, state, federal, and military perspective, this is indeed too hard to do, because so much complex coordination is required. All-inclusive answers to these and additional questions must be developed in a setting that mirrors the likely response to an incident.

*Capabilities:* Capabilities that are available at each level of response must be identified and compared with the likely requirements. Since mass casualty response begins with local emergency medical response, hospital emergency departments, and emergency management agencies, the capabilities in each of these local sectors must be clearly described. Next, response capabilities at the state level must be identified. These are often limited to National Guard resources under control of the Governor, as well as state law enforcement resources. Few states have significant medical response resources, though public health laboratories are essential in supporting a response to a natural pandemic or a biological terrorism agent. Finally, capabilities of various federal agencies must be defined. Dangerous assumptions are often made that because a particular local, state, or federal agency has a specific capability in its day-to-day mission, that agency could provide the same capability in the event of a national disaster.

*Close Capability Gaps:* As capability shortfalls are identified, responsible authorities in response agencies at all levels must develop plans for closing these gaps. Comprehensive plans include the required capability, the point in the evolution of the crisis when it is required, where the resource to meet this capability can be obtained, who must authorize the request, who must approve its fulfillment, who will reimburse associated costs, how the capability will be replaced when it goes to the requesting location, and when it will be released to return home. The most efficient surge capacity plans consist of obtaining capabilities from neighboring areas through mutual aid compacts. These agreements are used every day as police and fire response units move across jurisdictional boundaries to meet short-term surge needs.

Coordinated procedures and protocols for closing gaps beyond fire and emergency medical services are rarely in place for regional and multistate mass casualty incidents because few jurisdictions have had to develop them. The hurricane-prone Atlantic and Gulf Coasts and earthquake-prone California are usually exceptions, but by and large the United States is not ready for a national mass casualty response to a major incident.

## **Planning Deficiencies**

National all-hazard mass casualty planning for acts of terrorism, natural disasters, and public health emergencies includes three primary components, of which only the first two are being addressed. The first component is local and state response planning, which varies in quality according to the local community's experience and resources. For a terrorist attack such as the 2001 anthrax letters on the East Coast, an efficient response must consist of integrated, coordinated planning between all response sectors: public health, emergency medical services, fire, law enforcement, hospital-based emergency departments, private sector healthcare delivery, local emergency management agencies, local elected officials, military installations, public and private sector businesses who would provide food, water, utilities, communications, and transportation, local volunteer organizations, schools, faith-based organizations, and the news media. Such comprehensive local planning is rare. Furthermore, Katrina showed that even when plans are in place, they must be promptly executed. Local leaders cannot afford to wait for the Federal Government to provide an initial response.

The second component is planning for a Federal response, when states may approach the Federal Government through the Department of Homeland Security seeking Federal financial aid and response assets. Real Federal medical resources are limited, though, and primarily consist of small deployable medical teams from the National Disaster Medical System. Planning for Federal alternate hospital facilities is underway, but integration with actual local and state response capabilities has yet to be accomplished. These facilities will provide bed space to care for non-emergency hospitalized patients, so existing hospital space can be reserved for new, more seriously injured casualties. Katrina showed that staffing requirements for these facilities cannot be met from Federal sources. A senior National Disaster Medical System official underscored this deficiency when he reported in a 2004 Institute of Medicine workshop that a catastrophic disaster would require an additional 20,000 healthcare professionals beyond what could be provided by the Federal government. Catastrophic mass casualty planning is beginning at the federal level, but more important is the need to build interoperable state, regional, and federal response plans for smaller, more likely events.

The third component, not currently being addressed, is planning for a national response where problems are addressed that are too big for, or beyond the jurisdiction of, state and local agencies, and beyond clear Federal control. This type of planning often includes working with organizations and institutions that operate at the border between state and society, such as private sector businesses, volunteer organizations, faith-based organizations, national professional societies, and academic institutions. Such groups are not part of any formal governmental structure, but play a crucial role in society, providing essential support and cohesion. As Katrina demonstrated, involvement of these groups is essential to disseminate information via trusted local opinion leaders, to identify volunteers to assist in a mass casualty response and to maintain trust in local, state, and Federal authorities.

### **The Federal Role in Mass Casualty Planning**

The Federal Government has a leadership role in all three of these planning components. Federal agencies must support local and state agencies by providing principles for preparedness, goals and objectives, strategies for implementation, and opportunities for testing and exercising local plans. Perhaps most critical is the provision of funding with strings attached to cajole local and state agencies to develop interconnected regional plans.

Federal agencies must identify resources that are likely to make a difference in a local or regional terrorist or mass casualty incident response. A chemical, nuclear, radiological, or biological attack may call for the immediate deployment of capabilities that no local or state government can afford to maintain. National sources of hospital beds and medical equipment may be necessary, but identifying sufficient healthcare professionals and providing them and the hospitals in which they deliver emergency care with licensure and credentialing standards and liability protection is a much more crucial federal task. Prompt response actions are often hindered by built-in delays as requests for assistance flow from local to state to federal officials, so action thresholds for requesting additional help should be established in advance.

The Federal Government must create an environment in which best practices can be developed and tested. Alternative models for national solutions should be prototyped and fine tuned in a multistate region, then provided to state and local governments for adaptation to local needs. These models should include sources, organization, and management of healthcare professionals; credentialing, training, and personal protective equipment; and liability protection and reimbursement. Tools should be provided to maximize existing hospital bed space and to create alternate facilities, transport casualties to regions with excess capacity, and identify funding sources for local hospital preparedness. National professional medical and legal societies should be engaged to discuss mechanisms of triage and the graceful degradation of the quality of emergency care that will take place in the face of mass casualties.

### **Organizational Barriers to Coordinated Planning**

The rate-limiting step in coordinated planning is the requirement to work across bureaucratic, organizational, and professional barriers. Communication and coordination barriers thwart communication horizontally, with like agencies at the same levels of government,

and vertically, when proceeding up or down the chain of command. Organizational cultures become barriers when moving across agencies or business sectors; the resulting bureaucratic obstacles and inefficiencies seem to be ubiquitous and can be overcome only with sustained effort.

### **Crisis Decisionmaking**

To paraphrase General George S. Patton, the best plan is useless if executed too late. The best confirmation that planning and preparedness efforts are adequate is to demonstrate successful decisionmaking as a plan is executed in a staged crisis management exercise. Such tests must intentionally focus on cross-jurisdictional crisis communication.

None of these steps can happen, however, until the basic coordinated planning described above takes place. For Katrina, a massive Federal response in less than 72 hours was widely criticized due to a lack of understanding that the first response is necessarily a state and local responsibility.

### **Current Deficiencies**

Much positive work has been accomplished in the four years since September 11 and the subsequent anthrax attacks, but much remains to be done. For example, planning and training efforts are largely intra-agency rather than interagency. Federal funding supports this stove-piped approach rather than requiring cross-sector planning. Exercising of plans is rare, and the few that are exercises usually stop well before the point of failure, so true capabilities and limitations are rarely identified and corrected. Opportunities for senior leaders to learn about crisis decision-making in a realistic environment are almost nonexistent. There is little evidence of integration between local-state planning and federal planning. Catastrophic mass casualty planning certainly needs to be done at the federal level, but more important is the need to build interoperable response plans between the state, regional, and federal levels.

A national target for preparedness for combating terrorism has been proposed by the Gilmore Commission and applies equally to any domestic emergency:

*Preparedness for combating terrorism requires measurable demonstrated capacity by communities, states, and private-sector entities throughout the United States to respond to acute threats with well-planned, well-coordinated, and effective efforts by all of the essential participants, including elected officials, police, fire, medical, public health, emergency managers, intelligence, community organizations, the media, and the public at large.*

The tangible need for the United States is integrated, coordinated, all-hazard response planning. All requirements, capabilities, and potential sources must be considered and courses of action developed to close gaps. Plans need to be developed and realistically exercised, then improved, and exercised again. Training then must be developed that supports integration of these plans into day-to-day actions at every level.

Some are suggesting that the Defense Department should assume a greater role in responding to such domestic disasters, but a more realistic role might be proactive engagement in this planning process. The military possesses several core competencies that directly support mass casualty planning. These were brought out in the Defense Science Board 2003 Summer Study on DOD Roles and Missions in Homeland Security and include training, experimentation, and operational-level planning and execution. The need persists, though, as Katrina lessons are analyzed, to identify the mechanism in which military medical, logistics, and response planners may engage at the appropriate Federal, state, and local levels. Military planning for civil support will be ineffective if it is not carried out with all the agencies involved in a response. Engagement at the Federal interagency level is important but insufficient. It is incumbent on leadership to create the national forum in which functional, effective mass casualty preparedness planning can occur across artificial bureaucratic barriers.

Such a mass casualty planning forum should be cosponsored by the Departments of Homeland Security, Health and Human Services, and Defense, but must address local and state needs first. Its charter should be to support the development by states of local, state, and regional mass casualty preparedness and response plans, rather than simply Federal response plans. It must include private sector and volunteer capabilities, and must engage local and national medical associations. In the wake of Hurricane Katrina, this forum could initially focus on the various tasks associated with evacuation of the Gulf Coast, alternatives available when local resources and infrastructure are completely overwhelmed, and the preparedness and response steps necessary to minimize the consequences of a future natural disaster or terrorist attack in this region. If an earnest effort is made to develop effective plans that incorporate public, private, and volunteer resources, the risk of terrorism and the impact of natural disasters will be reduced and the homeland will indeed become more secure.

Mr. Chairman, this concludes my prepared statement. With the Committee's permission, I request my formal statement be submitted for the record. Mr. Chairman and members of the committee, I thank you for the opportunity to appear before you and I will be happy to answer any questions that you may have.